


```

LL          IIIIII          SSSSSSSS
LL          IIIIII          SSSSSSSS
LL          II             SS
LL          II             SS
LL          II             SS
LL          II             SS
LL          II             SSSSSS
LL          II             SSSSSS
LL          II             SS
LL          II             SS
LL          II             SS
LL          II             SS
LL          II             SSSSSS
LLLLLLLLLL IIIIIIII          SSSSSSSS
LLLLLLLLLL IIIIIIII          SSSSSSSS

```

(2) 53
(3) 83
(4) 140

DECLARATIONS
MTH\$FLOOR - greatest integer floating routine
MTH\$FLOOR_R1 - JSB entry point

```
0000 1      .TITLE  MTHSFLOOR - Greatest integer floating routine
0000 2      .IDENT  /1-006/                               ; File: MTHFLOOR.MAR
0000 3
0000 4
0000 5 *****
0000 6 *****
0000 7 *  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
0000 8 *  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
0000 9 *  ALL RIGHTS RESERVED.
0000 10
0000 11 *  THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
0000 12 *  ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
0000 13 *  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR ANY OTHER
0000 14 *  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
0000 15 *  OTHER PERSON. NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
0000 16 *  TRANSFERRED.
0000 17
0000 18 *  THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
0000 19 *  AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
0000 20 *  CORPORATION.
0000 21
0000 22 *  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
0000 23 *  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 24
0000 25 *****
0000 26 *****
0000 27
0000 28
0000 29 ++
0000 30 FACILITY: Math Library
0000 31
0000 32 ABSTRACT:
0000 33
0000 34 This routine finds the largest integer less than the input
0000 35 value, i.e. it truncates toward negative infinity
0000 36 for type float.
0000 37
0000 38 ENVIRONMENT: User Mode, AST Reentrant
0000 39
0000 40 --
0000 41 AUTHOR:R. Will,          CREATION DATE: 1-Dec-78
0000 42
0000 43 MODIFIED BY:
0000 44
0000 45 VERSION 00
0000 46 1-001 - Original
0000 47 1-002 - Add " " to the PSECT directive. JBS 22-DEC-78
0000 48 1-003 - Put MTHSAINT code in line. RW 26-Mar-79
0000 49 1-004 - Correct bug for -1 < input < 0. RW 11-Jul-79
0000 50 1-005 - Add a JSB entry point. JBS 25-JUL-1979
0000 51 1-006 - Change name to MTHSFLOOR. JBS 27-JUL-1979
```



```

0000 53      .SBTTL  DECLARATIONS
0000 54      :
0000 55      : INCLUDE FILES:
0000 56      :
0000 57      :
0000 58      :
0000 59      : EXTERNAL DECLARATIONS:
0000 60      :
0000 61      :      .DSABL  GBL
0000 62      :
0000 63      :
0000 64      :
0000 65      : MACROS:
0000 66      :
0000 67      :
0000 68      :
0000 69      : EQUATED SYMBOLS:
0000 70      :
0000 71      :
0000 72      :
0000 73      : OWN STORAGE:
0000 74      :
0000 75      :
0000 76      :
0000 77      : PSECT DECLARATIONS:
0000 78      :
00000000 79      :      .PSECT  _MTH$CODE  PIC,  USR,  CON,  REL,  LCL,  SHR,  -
0000 80      :      EXE,  RD,  NOWRT,  LONG
0000 81

```

```

: Prevent undeclared
: symbols from being
: automatically global.

```

```
0000 83 .SBTTL MTHSFLOOR - greatest integer floating routine
0000 84 :++
0000 85 : FUNCTIONAL DESCRIPTION:
0000 86 :
0000 87 : This routine finds the floor by truncating, and then if the
0000 88 : input value is negative and not an integer subtracting 1.
0000 89 :
0000 90 : CALLING SEQUENCE:
0000 91 :
0000 92 : CALL result_int.wf.v = MTHSFLOOR (input.rf.r)
0000 93 :
0000 94 : INPUT PARAMETERS:
0000 95 :
0000 96 : input_addr = 4
0000 97 :
0000 98 : IMPLICIT INPUTS:
0000 99 :
0000 100 : NONE
0000 101 :
0000 102 : OUTPUT PARAMETERS:
0000 103 :
0000 104 : NONE
0000 105 :
0000 106 : IMPLICIT OUTPUTS:
0000 107 :
0000 108 : NONE
0000 109 :
0000 110 : FUNCTION VALUE:
0000 111 : COMPLETION CODES:
0000 112 :
0000 113 : the floating value of the greatest integer
0000 114 :
0000 115 : SIDE EFFECTS:
0000 116 :
0000 117 : NONE
0000 118 :
0000 119 :--
0000 120 :
0000 121 :.ENTRY MTHSFLOOR, "M<>" ; entry point
0002 122 :
51 51 08 50 04 BC 50 0002 123 MOVF @input_addr(AP), R0 ; R0 = arg
51 51 08 50 04 BC 50 0006 124 EMOVF R0, #0, #1, R1, R1 ; R1 = fraction_part(R0)
51 51 08 50 04 BC 50 000C 125 SUBF R1, R0
000F 126
000F 127 BGTR 40$ ; if > 0, have correct answer
0011 128
0011 129 TSTF R1 ; look at fraction part
0013 130 BGEQ 40$ ; if > 0, 0 < input < 1 and
0015 131 ; we have the correct answer
0015 132 ; if = 0, input was integer and
0015 133 ; we have the correct answer
50 08 42 0015 134 SUBF2 #1, R0 ; subtract 1 from truncated
0018 135 ; negative non-integer
0018 136
0018 137
04 0018 138 40$: RET
```

```
0019 140 .SBTTL MTH$FLOOR_R1 - JSB entry point
0019 141 :++
0019 142 : FUNCTIONAL DESCRIPTION:
0019 143 :
0019 144 :     This is the JSB entry point to MTH$FLOOR.
0019 145 :
0019 146 : CALLING SEQUENCE:
0019 147 :
0019 148 :     JSB result_int.wf.v = MTH$FLOOR_R1 (input.rf.v)
0019 149 :
0019 150 : INPUT PARAMETERS:
0019 151 :
0019 152 :     R0 contains the input value
0019 153 :
0019 154 : IMPLICIT INPUTS:
0019 155 :
0019 156 :     NONE
0019 157 :
0019 158 : OUTPUT PARAMETERS:
0019 159 :
0019 160 :     NONE
0019 161 :
0019 162 : IMPLICIT OUTPUTS:
0019 163 :
0019 164 :     NONE
0019 165 :
0019 166 : FUNCTION VALUE:
0019 167 : COMPLETION CODES:
0019 168 :
0019 169 :     the floating value of the greatest integer
0019 170 :
0019 171 : SIDE EFFECTS:
0019 172 :
0019 173 :     NONE
0019 174 :
0019 175 :--
0019 176
0019 177 MTH$FLOOR_R1::                                ; entry point
0019 178
0019 179 EMOVF R0, #0, #1, R1, R1                        ; R1 = fraction_part(R0)
001F 180 SUBF R1, R0
0022 181
0022 182 BGTR 40$                                         ; if > 0, have correct answer
0024 183
0024 184 TSTF R1                                         ; look at fraction part
0026 185 BGEQ 40$                                    ; if > 0, 0 < input < 1 and
0028 186                                         ; we have the correct answer
0028 187                                         ; if = 0, input was integer and
0028 188                                         ; we have the correct answer
0028 189
0028 190 SUBF2 #1, R0                                   ; subtract 1 from truncated
0028 191                                         ; negative non-integer
0028 192
0028 193 40$: RSB
002C 194
002C 195 .END
```


MTH\$FLOOR
Symbol table

- Greatest integer floating routine^{J 4}

16-SEP-1984 01:24:03 VAX/VMS Macro V04-00
6-SEP-1984 11:23:13 [MTHRTL.SRC]MTHFLOOR.MAR;1

Page 5
(4)

INPUT_ADDR = 00000004
MTH\$FCOOR 00000000 RG 01
MTH\$FLOOR_R1 00000019 RG 01

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes
ABS	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
_MTH\$CODE	0000002C (44.)	01 (1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.08	00:00:00.48
Command processing	115	00:00:00.51	00:00:03.55
Pass 1	70	00:00:00.51	00:00:02.66
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	46	00:00:00.38	00:00:01.18
Symbol table output	2	00:00:00.00	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	266	00:00:01.52	00:00:07.92

The working set limit was 900 pages.
2069 bytes (5 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 3 non-local and 2 local symbols.
195 source lines were read in Pass 1, producing 11 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.

! Macro library statistics !

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:MTHFLOOR/OBJ=OBJ\$:MTHFLOOR MSRC\$:MTHFLOOR/UPDATE=(ENH\$:MTHFLOOR)

0260

DIGITAL EQUIPMENT CORPORATION
CONFIDENTIAL AND PROPRIETARY